# *StreamRunner*™ SVA Audio Mixing Firmware User's Manual

MANU0299-01 - Rev. A - April 1998

This user's manual explains how to install and use the *StreamRunner*™ SVA Audio Mixing Firmware (SVA-AMF), an add-on package used with the *StreamRunner* SVA-5.0 software distribution. With the SVA-5.0.1 software release, you can arrange a high-quality, point-to-point video conference between two sites. If each site has an AVA-300 and an ATV-300, the **`svapatch`** command can be used to connect audio and video streams from each site's AVA-300 to the other site's ATV-300. The setup is simplest if the AVA-300 and ATV-300 at each site are arranged as a CellChain™. (Refer to Chapter 7 of the *StreamRunner AVA/ATV User's Manual* for a discussion of CellChains.) Additional video sources (such as slide cameras or PC output) can be incorporated using the various screen layouts supported by **`svapatch's -format`** option.

By adding the SVA-AMF package to an SVA-5.0 system, multi-site conferences with audio mixing become possible. Video is multicast directly between the sites as before, while audio is connected via an audio mixer.

The function of the audio mixer is to combine audio streams from the contributing sites into a number of *mixes*. Each contributor hears a mix of the audio from the *other* contributors. A further mix of audio from *all* contributors is available for connection to non-contributing *audience* sites. The mixes produced by the ATV-AMF are stereo; each monophonic audio contribution is panned to its own distinct position in the mixes.

The audio mixer is simply a standard ATV-300 device. It runs special firmware which is installed with the SVA-5.0 **`atvdownload`** command.

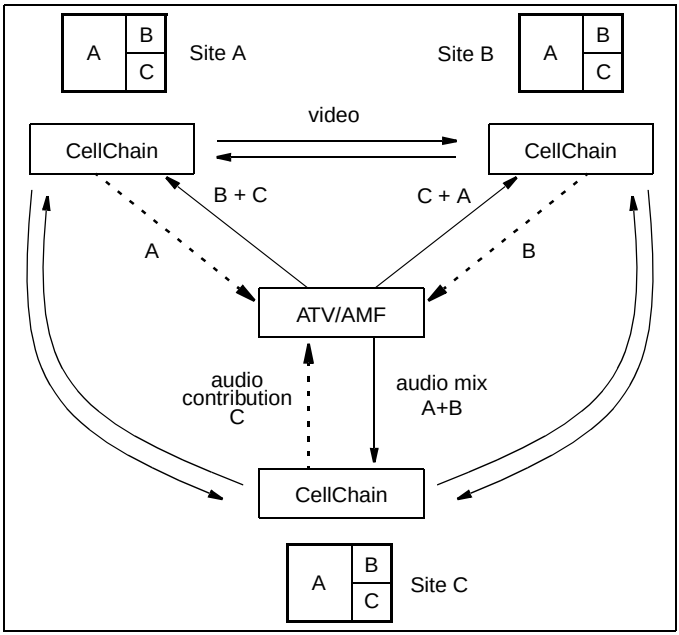



**Figure 1 -** Logical Data Flow of a Three-Way Conference

## Package Components

The SVA-AMF package for SVA-5.0.1 consists of the following main components:

1. Audio mixing firmware for the ATV-300
2. `svaconfer` program for setting up conferences between specified sites
3. SVA 5.0.1 software distribution (`svadefaults` file contains AVA-300 stream definitions for conferencing)

The `svaconfer` program is supplied both as an ordinary executable and as a Perl script with the same command-line interface. The executable can be used whether or not Perl is installed on your platform. The Perl script is for information only and can be used as a basis for your own customization.


The SVA 5.0.1 software distribution supports essentially the same functionality as the SVA 5.0 distribution. SVA-AMF assumes a working knowledge of SVA 5.0 principles; refer to the *StreamRunner AVA/ATV User's Manual* for information on how to use SVA 5.0.

## Installation Requirements

To use the SVA-AMF package, the following are required:

- An AVA-300 and ATV-300 at each contributing site, and ATV-300s at any non-contributing audience sites.
- An installation of SVA-5.0.1 on one of the supported platforms. Supported platforms include Solaris 2.5 or 2.6, Irix 6.3, or Windows NT 4.0.

**NOTE** SVA-AMF is not supported on Windows 95.

- At least one additional ATV-300 to act as an audio mixer. One ATV-300 running SVA-AMF is required for each conference. Each such ATV-300 can mix audio contributions from up to four sites. Conferences with more than four contributing sites are not currently supported, though SVA-AMF places no limits on the size of the audience.

Figure 2 illustrates the physical set-up of a typical three-way conference, showing the relative position of each component and the bi-directional fiber that connects them.

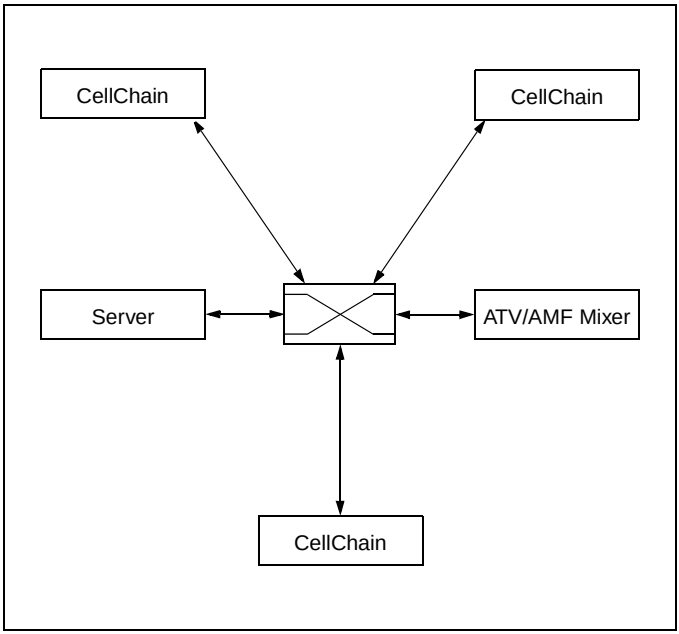



**Figure 2 -** Physical Set-up of a Three-Way Conference

## Installing SVA-AMF on UNIX Platforms

On UNIX platforms (Solaris 2.5 and 2.6 and Irix 6.3), SVA-AMF is included as part of the SVA-5.0.1 distribution as a compressed `tar` file which needs to be uncompressed and extracted.

To install the SVA-AMF software, do the following:

1. Go to the directory where you wish to install the software. In the following examples, your HOME directory is assumed. Type one of the following to get to your HOME directory:

   **`cd $HOME`** or **`cd`**

2. Copy the distribution file into your HOME directory.
3. Uncompress the file using the following command:

   **`uncompress`** *<your operating system type>* **`_sva5.0.1.tar.Z`**

4. Extract the file contents using the following command:

   **`tar xvf`** *<your operating system type>* **`_sva5.0.1.tar`**

The system creates a directory called `SVA-5.0.1`. In addition to the sub-directories that make up the SVA software distribution (see the *StreamRunner AVA/ATV User's Manual* for the complete list,) the following AMF files are also added:

| | |
|---|---|
| **bin/** | **`svaconfer`** binary and **`svaconfer.pl`** Perl script |
| **firmware/** | `amf300.18` audio mixing firmware for ATV-300 |
| **man/man1/** | On-line documentation for **`svaconfer`** |
| **html/man1/** | HTML version of **`svaconfer`** man page |

5. Properly set the environment variables to allow you access to the binaries and on-line documentation, as described in Chapter 4 of the *StreamRunner AVA/ATV User's Manual.*

   Be sure to substitute **`SVA-5.0.1`** for **`SVA-5.0.0`** when setting the variables for SVA-AMF.

6. Download the `amf300.18` audio mixing firmware to the ATV-300 device to be used as the mixer. The procedure is described in Appendix D of the *StreamRunner AVA/ATV User's Manual.* To summarize: terminate any manager process involving the ATV-300, then download the new firmware by typing:

   **`svarun atvdownload -device`** *<switch:port>* **`-f \`**
   **`./SVA-5.0.1/firmware/amf300.18`**

   You have installed the SVA-AMF software and downloaded the `amf300.18` audio mixing firmware.

7. Verify the new firmware download to the mixer by using the **`atvreset`** command as described in Chapter 4 of the *StreamRunner AVA/ATV User's Manual.*

You are now ready to set up conferences with **`svaconfer`**.

## Installing SVA-AMF on Windows NT

SVA-AMF is packaged along with the SVA 5.0.1 software distribution.

To install the SVA-AMF / 5.0.1 package, do the following:

1. Download the zip file containing the SVA distribution from the Internet.
2. Use WinZip to extract the file into a temporary directory.
3. Double click on the `Setup` Application file. The *ForeThought* `SVA-5.0 Setup Screen` is displayed.


Do not install this release over a previous copy of the SVA distribution. Remove any old release from the NT registry using `Add/Remove Programs` in the `Control Panel` prior to performing this step. Refer to the *StreamRunner AVA/ATV User's Manual.* Be careful not to delete any manager or `sva-ctrl` configuration files that you may want to re-use. It is also advisable to exit from any other Windows-based applications you may be running.

4. Follow the on-screen setup instructions that are displayed. Read the information contained in each window and click on the `Next>` button to advance through the setup sequence.


The setup installs the SVA 5.0 software in the default destination folder `C:\Program Files\FORE Systems, Inc.\ForeThought SVA 5.0`. Click on `Browse...` to select another folder if you choose to do so.


`NRLTRADERS` is a list of host machines that are running traders. On the `NRLTRADERS Screen`, you are prompted to enter the hostname(s) of the machine(s) that are running traders and managers that you may wish to access. Consult your system administrator if you are not sure of the appropriate hostnames. In addition, traders and managers are not supported on machines running Windows 95; host machines must be running either Windows NT or UNIX.

5. Complete the software installation by clicking `Finish` in the `Setup Complete Screen`.


If you are running as the administrative user on Windows NT, you have the option of making the installation available to all users (recommended); other users may only install the software for themselves.

In the current version of the installer, you cannot install the software more than once on a machine; if user A installs it, user B cannot install or remove it, or view it from their `Start Menu` or on their PATH.

Therefore, the administrative user is strongly advised to install the software on the machine before another user does, thus allowing all users to see it.

You have installed the SVA-AMF software. The next steps involve downloading the `amf300.18` audio mixing firmware using SVA Control.


Refer to Chapter 6 in the *StreamRunner AVA/ATV User's Manual* for general information on the functionality of SVA Control.

6. Click on the "plus" icon to the left of the `Configuration` icon.
7. Click on `ATV Download`.
8. Move the slider bar to the `Advanced` position.
9. In the `Properties` dialog, input either your `SPVC endpoint` (if using *ForeThought* 5.0) or `VCI` (if using *ForeThought* 4.1.6).
10. In the `Filename` field, type `..\firmware\amf300.18`.
11. Click on the `Enter` button and then the `Start` button.

    You have downloaded the `amf300.18` audio mixing firmware.
12. Verify the new firmware download to the mixer by opening a command window and changing the directory to:

    `c:\program files\fore systems, inc.\forethought sva-5.0\bin`
13. Execute the **`atvreset`** command as described in detail in Appendix A of the *StreamRunner AVA/ATV User's Manual.*

You are now ready to set up conferences with **`svaconfer`**.

## Using svaconfer to Set Up a Conference

To set up a three-way conference similar to the one shown in Figure 1, do the following:

1. Make sure that the AVA / ATV CellChains at sites A, B, and C are managed by `svamgrs`.


All managers must be run under SVA 5.0.1.

2. Start an `svamgr` for the audio mixer ATV-300. Assume that the three sites' SVA managers are called `site-A`, `site-B` and `site-C`, and that the mixer's SVA manager is called `atv-amf`. Refer to the *StreamRunner AVA/ATV User's Manual* for details of how to run these four `svamgrs`.

   The audio stream used is called `conference-audio`; it defines a mono line-level signal on input `1L` of the AVA-300.


For mono streams, the AVA-300 only samples the signal on the `left` channel of a stereo input pair. Therefore, a site's audio source should be connected to the `left` channel on its AVA-300, *not* the `right` channel.

3. The `input channel` and `gain level` can be changed with `svc-rtds` or by editing the `svadefaults` file, but the `sample rate`, `sampling mode`, and `packing factor` must remain unchanged in order for the mixer to work.

   The conference can now be set up with `svaconfer`.

## svaconfer on UNIX Platforms

To start the conference, issue the following command at a shell prompt:

```
svaconfer atv-amf site-A site-B site-C
```

This forks four **svapatch** processes to make the connections shown in Figure 1 and waits to be stopped by a **SIGINT** signal (<Ctrl-C> from the controlling terminal).

The general form of the **svaconfer** command is as follows:

**svaconfer -format** *<fmt> <mixer> <chain1> <chain2> <chain3>* **...**

The **-format** *<fmt>* option defines the number of contributing sites and specifies the layout for the corresponding video streams on all site ATV-300s in the conference. It can be omitted, and if it is left out, the format used is determined by the number of sites given in the rest of the command line. The supported formats are described below.

The *<mixer>* argument gives the name of the SVA manager in charge of the ATV-300 running the AMF firmware. It must be the first SVA manager mentioned on the **svaconfer** command line.

The *<chain1> <chain2> <chain3>* **...** arguments give the names of the SVA managers for the AVA-300s and ATV-300s at the contributing and audience sites. The contributing sites are given first; any additional manager names above the number defined by the conference format specify audience sites. Audience sites only need an ATV-300.

If a site has an AVA-300 and an ATV-300 which are arranged on separate switch ports with separate SVA managers instead of on a CellChain with a single SVA manager, it can be specified as *<ava1>,<atv1>* instead of *<chain1>*.

The **svapatch** processes forked by **svaconfer** are of three kinds:

- one to the mixer, bringing in the audio from each of the contributors
- one to each contributor, giving them their custom audio mix from the mixer and video from all the contributors (including themselves)
- one to all the audience's ATV-300s, giving the complete audio mix and video from all the contributors

Since there is no audience in the three-way example, only the first two kinds of **svapatch** are needed.

## svaconfer on Windows NT

On Windows NT, **svaconfer** can be started either at a DOS prompt or through SVA Control. This section describes using SVA Control.


This section assumes a working knowledge of SVA Control. Refer to Chapter 6 in the *StreamRunner AVA/ATV User's Manual* for information on starting traders and managers and how to establish SVCs between devices.

1. Access SVA Control.
2. Start a trader.
3. Register the device/chain managers. For the three-way conference, you must start three CellChains (named `chain1`, `chain2`, and `chain3`) and one ATV-300 (`mixer`).


Running `svc-rtds` provides verification that your managers are running; they appear one-by-one in the AVA/ATV `Manager Browser` as you start them.

4. Click on the `Video Conference` button.

   The `Video Conference` icon is illuminated.
5. Click on the `Add` button.

   The "plus" icon is displayed on the left of the icon tree.
6. Double-click on the `Video Conference` icon and then click on the `Unassigned` icon.
7. In the illuminated `Properties` dialog, type in the appropriate data in the `Format`, `Mixer`, and `Site` # fields.
8. Click on the `Enter` button and then the `Start` button.

You have completed a three-way conference.

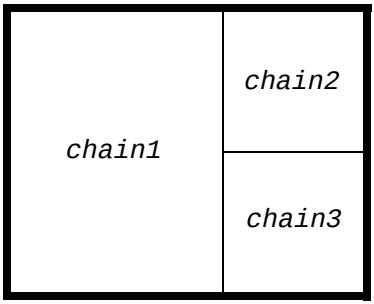

The conference will not be saved when you close SVA Control. You must save the entire SVA Control configuration file for later use.

## Supported Screen Formats

The screen layouts supported by **svaconfer**'s **-format** option are the same as those supported by the underlying **svapatch** command. They are as follows:

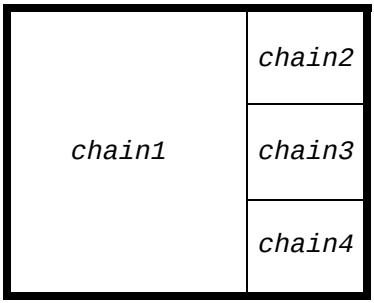
### conf3

Expects three contributing sites. It divides the screen into a large, roughly square window occupying two-thirds of the screen, and two smaller windows arranged in a vertical column to the right. The large window shows *<chain1>*, while the top- and bottom-right windows show *<chain2>* and *<chain3>* respectively:



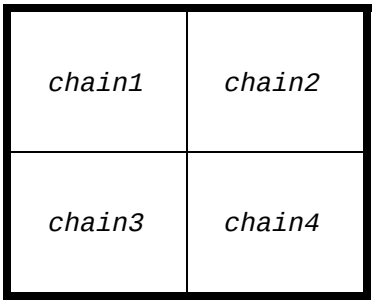

### conf4

Similar to conf3, but there are three windows in the vertical column, and four contributing sites are expected:



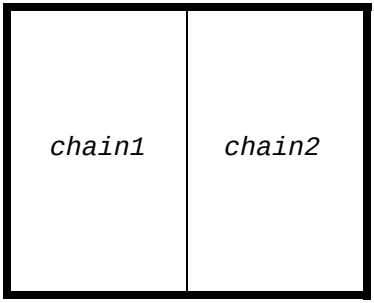
**4up**

Divides the screen in half both horizontally and vertically and also expects four contributing sites. The top-left, top-right, bottom-left and bottom-right windows show *<chain1>, <chain2>, <chain3>* and *<chain4>* respectively:




**2up**

Divides the screen in half vertically and expects two contributing sites. The left- and right-hand windows show *<chain1>* and *<chain2>* respectively:




**NOTE**

If no *audience* sites are specified, this two-way configuration does not need any audio mixing. It can be managed by one **svapatch** in each direction. There is no need to use **svaconfer** and a mixer unless you want to allow audio sites to connect at a later time.

**1up**

Gives the entire screen to one site. It is only useful in order to check that **svapatch** connections can be successfully established to and from the audio mixer from a single site. When such patches are connected, the single site is able to see itself, but not to hear itself; signals going into the audio input 1L of the site AVA-300 should not come out of the site ATV-300's audio output. This indicates that the site audio signal is being correctly removed from its custom audio mix.

## Contacting FORE Systems Technical Support

In the U.S.A., customers can reach FORE Systems' Technical Assistance Center (TAC) using any one of the following methods:

1. Select the "Support" link from FORE's World Wide Web page:

   **http://www.fore.com/**

2. Send questions, via e-mail, to:

   **support@fore.com**

3. Telephone questions to "support" at:

   **800-671-FORE (3673)** or **724-742-6999**

4. FAX questions to "support" at:

   **724-742-7900**

Technical support for customers outside the United States should be handled through the local distributor or via telephone at the following number:

**+1 724-742-6999**

No matter which method is used to reach FORE Support, customers should be ready to provide the following:

- A support contract ID number
- The serial number of each product in question
- All relevant information describing the problem or question.

FORE Systems, Inc.



FORE Systems, Inc.
1000 FORE Drive
Warrendale, PA 15086-7502
Phone: 724-742-4444
FAX: 724-742-7742

http://www.fore.com